In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method of producing a bioabsorbable, implantable substrate having a graded molecular weight distribution, comprising the steps of providing an implantable substrate and altering the molecular weight distribution of at least a portion of the implantable substrate by exposing that portion of the implantable substrate to electron beam irradiation.

2-18. (Cancelled)

19. (New) The method of claim 1, wherein the implantable substrate is exposed to one or more doses of electron beam irradiation having an intensity of 0.1 to 10 MeV for 0.1 to 100 seconds and the electron beam irradiation penetrates 0.1 to 40 mm from the surface of the implantable substrate.

20. (New) The method of claim 1, wherein the implantable substrate is exposed to more than one dose of electron beam irradiation and each dose of electron beam irradiation is of a different intensity.

21. (New) The method of claim 20, wherein each dose of electron beam irradiation penetrates the implantable substrate to a different depth.

22. (New) The bioabsorbable, implantable substrate produced by the method of claim 1, wherein the molecular weight distribution of at least a portion of the implantable substrate has been altered by exposing that portion of the implantable substrate to the electron beam irradiation.

23. (New) The bioabsorbable implantable substrate of claim 22, comprising a bioabsorbable polymer having a graded molecular weight distribution through at least a portion of its thickness

24. (New) The substrate of claim 22, wherein the rate of bioabsorbability of the implant is predetermined.

25. (New) The substrate of claim 22, having a graded molecular weight distribution through the complete thickness of the implantable substrate.

26. (New) The substrate of claim 22, having an outer surface and a core, wherein the molecular weight distribution of the implantable substrate is greater at the core than at the outer surface,

and wherein the rate of bioabsorbability of the core is less than the rate of bioabsorbability of the outer surface.

27. (New) The substrate of claim 26, wherein the outer surface and the core of the bioabsorbable implantable substrate are formed from the same material.

28. (New) The substrate of claim 22, comprising a composition selected from polyglycolide (PGA), polycaprolactone, polylactide (PLA), poly(dioxanone) (PDO), poly(glycolide-co-trimethylene carbonate) (PGA-TMC), polyanhydrides, poly(propylene fumarate), polyurethane, and copolymers thereof and combinations thereof.

29. (New) The substrate of claim 22, formed into an interference screw, a suture anchor, a bioresorbable polymer composite, or a bioabsorbable scaffold for tissue regeneration and growth.

30. (New) The method of claim 1, further comprising exposing the entire surface of the implantable substrate to electron beam irradiation, thereby altering the molecular weight distribution of the entire surface of the implantable substrate.

31. (New) The method of claim 30, wherein the implantable substrate is exposed to one or more doses of electron beam irradiation having an intensity of 0.1 to 10 MeV for 0.1 to 100 seconds and the electron beam irradiation penetrates 0.1 to 40 mm from the surface of the implantable substrate.

32. (New) The method of claim 30, wherein the implantable substrate is exposed to more than one dose of electron beam irradiation and each dose of electron beam irradiation is of a different intensity.

33. (New) The method of claim 32, wherein each dose of electron beam irradiation penetrates the implantable substrate to a different depth.

34. (New) The bioabsorbable, implantable substrate produced by the method of claim 30, wherein the molecular weight distribution of the entire surface of the implantable substrate has been altered by exposing the entire surface of the implantable substrate to the electron beam irradiation.

35. (New) The bioabsorbable implantable substrate of claim 34, comprising a bioabsorbable polymer having a graded molecular weight distribution through at least a portion of its thickness.

36. (New) The substrate of claim 34, wherein the rate of bioabsorbability of the implant is predetermined.

37. (New) The substrate of claim 34, having a graded molecular weight distribution through the complete thickness of the implantable substrate.

38. (New) The substrate of claim 34, having an outer surface and a core, wherein the molecular weight distribution of the implantable substrate is greater at the core than at the outer surface, and wherein the rate of bioabsorbability of the core is less than the rate of bioabsorbability of the outer surface.

39. (New) The substrate of claim 38, wherein the outer surface and the core of the bioabsorbable implantable substrate are formed from the same material.

40. (New) The substrate of claim 34, comprising a composition selected from polyglycolide (PGA), polycaprolactone, polylactide (PLA), poly(dioxanone) (PDO), poly(glycolide-co-trimethylene carbonate) (PGA-TMC), polyanhydrides, poly(propylene fumarate), polyurethane, and copolymers thereof and combinations thereof.

41. (New) The substrate of claim 34, formed into an interference screw, a suture anchor, a bioresorbable polymer composite, or a bioabsorbable scaffold for tissue regeneration and growth.

42. (New) A method of modifying a rate of bioabsorbability of at least a portion of a bioabsorbable, implantable substrate, comprising the step of exposing that portion of the implantable substrate to electron beam irradiation.

43. (New) A method of treating a disorder of, or damage to, hard or soft tissue in a human or animal subject in need of such treatment, said method comprising the step of implanting the substrate of claim 22 into the human or animal body to treat, repair or replace the diseased or damaged hard or soft tissue.

44. (New) The method of claim 43, wherein the disorder is osteo- or rheumatoid arthritis, osteoporosis, inflammatory, neoplastic, traumatic or infectious tissue conditions, syndromes characterised by chondrodysplasia, synovitis, or systemic lupus erthematosus; or wherein the damage results from wounds sustained during surgery, cartilage damage, fracture, ligament tears, or hernia.

45. (New) A method of using the composition of claim 22 in manufacturing a medicament or medical device for the repair, treatment or replacement of diseased or damaged hard or soft tissue of in a human or animal subject.

46. (New) A method of treating a disorder of, or damage to, hard or soft tissue in a human or animal subject in need of such treatment, said method comprising the step of implanting the substrate of claim 35 into the human or animal body to treat, repair or replace the diseased or damaged hard or soft tissue.

47. (New) The method of claim 46, wherein the disorder is osteo- or rheumatoid arthritis, osteoporosis, inflammatory, neoplastic, traumatic or infectious tissue conditions, syndromes characterised by chondrodysplasia, synovitis, or systemic lupus erthematosus; or wherein the damage results from wounds sustained during surgery, cartilage damage, fracture, ligament tears, or hernia.

48. (New) A method of using the composition of claim 35 in manufacturing a medicament or medical device for the repair, treatment or replacement of diseased or damaged hard or soft tissue of in a human or animal subject.